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EXAMINER	
LESPERANCE, JEAN E	
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2629	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/15/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/681,348	Applicant(s) JUNG ET AL.	
	Examiner Jean E. Lesperance	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 January 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-59* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-59* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 October 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. The amendment filed January 18, 2007 is entered and claims 1-59 are pending.

Response to Arguments

2. Applicant's arguments filed January 18, 2007 have been fully considered but they are not persuasive. The applicant argued that in view of the amendment in claims 30-36, 42-48, and 54-58 is now believe to be moot. Examiner disagrees with the applicant because the amendment does not correct the confusion with the drawings and the claimed language. For example, the applicant has amended Fig.20 of the drawing by changing insulating layer 58 to insulating layer 69 but the specification still has the insulating layer 58. What is the difference between insulating layer 58 and insulating 69? In claims 30 and 42, the overcoat layer was replaced by color filter but the drawings fails to show where a first transparent layer on the color filter. The Examiner does not see anywhere in the drawings where a first transparent layer is on the color filter.

The applicant argued that the prior art does not teach an EM sensor having first and second coil arrays formed of transparent electrode where first and second arrays includes a transparent conductive material. Examiner disagrees with the applicant because the prior art teaches the current attributable to area K 310 on sensing electrode L 311 will flow to node O 312 and the current attributable to area M 313 on sensing electrode N 314 will flow to node P 315. Area K 310 is much larger than area M 313, so the current flowing to node O 312 will be larger than the current flowing to node

P 315, which is determinative of the location of the object relative to the center of the array of sensing electrodes (column 5, line 63 to column 6, line 3) where K and M represent the first and second coil arrays, the sensor (capacitive touch sensor Fig.3B (30) and transparent conductor 14 (which also acts as guard electrode 31 for the capacitive touch sensor of FIG. 3B) is an unpatterned film of transparent conductive material, usually 100-200 nm of deposited indium tin oxide (column 4, lines 11-14). The applicant has to amend the claims to be more specific by defining the first and second coil arrays to distinguish over the prior art. Therefore, the rejection is maintained.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a) because they fail to show " "a first transparent insulating layer on the overcoat layer, wherein the first coil array is formed between the first transparent insulating layer and color filter; and a second transparent insulating layer on the first transparent insulating layer, wherein the second coil array is formed between the first transparent insulating layer and the second transparent insulating layer" as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as

"amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 30-36, 42-48, and 54-58 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In dependent claims 30, 42, and 54, the claimed limitations "a first transparent insulating layer on the color filter, wherein the first coil array is formed between the first transparent insulating layer and the color filter; and a second transparent insulating layer on the first transparent insulating layer, wherein the second coil array is formed between the first transparent insulating layer and the second transparent insulating layer" are indefinite for failing to

particularly point out and distinctly claim the subject matter which applicant regards as the invention. How can the first coil array being formed between the first transparent insulating layer and the overcoat layer when there is no connection between the first transparent insulating layer and the overcoat layer and the first and second coil arrays are formed of a transparent electrode? How can the second coil array is formed between the first transparent insulating layer and the second transparent insulating layer when the first and second coil arrays formed of a transparent electrode? Explanation and correction are required.

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 7-12, 21-27, 30-36, 42-48, and 54-58 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In dependent claims 30, 42, and 54, the claimed limitations "a first transparent insulating layer on the color filter, wherein the first coil array is formed between the first transparent insulating layer and the color filter; and a second transparent insulating layer on the first transparent insulating layer, wherein the second coil array is formed between the first transparent insulating layer and the second transparent insulating layer" are not clear. The specification fails to describe

how the first transparent insulating layer, the overcoat layer, the second transparent insulating layer, the first transparent insulating layer, the first coil array, and the second coil array are relating to each in a concise manner. Correction is required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 1-6, 13-20, 28, 29, 40, 41, 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent # 5,847,690 ("Boie et al") in view of US Patent # 5,162,782 ("Yoshioka").

Regarding claim 1, Boie et al. teach an LCD device including a touch panel (A unitary display and sensing device integrates liquid crystal display module elements of a liquid crystal display module for detecting input on a flat panel display screen with the capability for digitizing the detected inputs (abstract)) comprising:

an LCD panel (liquid crystal module) having first (color filter plate Fig.2 (10)) and second substrates (active matrix plate Fig.2 (25)) facing each other, and a liquid crystal layer (liquid crystal Fig.2 (16) between the first and second substrates;

a sensor (capacitive touch <u>sensor</u> Fig.3B (30)) having first and second coil arrays formed of a transparent electrode (The current attributable to area K 310 on sensing electrode L 311 will flow to node O 312 and the current attributable to area M 313 on

sensing electrode N 314 will flow to node P 315. Area K 310 is much larger than area M 313, so the current flowing to node O 312 will be larger than the current flowing to node P 315, which is determinative of the location of the object relative to the center of the array of sensing electrodes (column 5, line 63 to column 6, line 3) where K and M represent the first and second coil arrays, the sensor (capacitive touch sensor Fig.3B (30)) integrated with any one of the first and second substrates in the LCD panel (LCD module Fig.2); and

a backlight (backlight, Fig.1A) unit below the LCD panel (LCD module, Fig.1A). accordingly, the prior art teaches all the claimed limitations with the exception of providing an EM sensor.

However, Yoshioka teaches a magnetic field sensor Fig.1 (7).

Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize the magnetic field as taught by Yoshioka in the integrated liquid crystal display disclosed by Boie because this would provide a display device with a coordinate input function even in case of a liquid crystal display panel having a display screen divided into two, upper and lower parts to be driven separately, by ensuring the coordinate input detection signal current flowing, in a two-layer type liquid crystal display panel (column 2, lines 41-47).

Regarding claim 2, Boie et al. teach a controller for controlling the EM sensor below the backlight unit (Liquid crystal display panels are used in many electronic data handling devices, including lap-top computers, personal digital assistants, personal organizers, and point-of-sale terminals (column 1, lines 11-14), where the lap-top

computers are including controller.

Regarding claim 3, Boie et al. teach the first coil array is perpendicular to the second coil array (K (310) and M (313) represent the first and second coil arrays where K and M are perpendicular to one another.

Regarding claim 4, Boie et al. teach the sensor is on an outer surface of any one of the first and second substrates (capacitive touch sensor Fig.3B (30) is located in the outer surface. (See figure 4B).

Regarding claim 5, Boie et al. teach the sensor includes an adhesive layer on a surface opposite to the LCD panel (A perimeter <u>adhesive</u> seal 19 confines liquid crystal material 16 to the area remaining between transparent conductors 14, 18 and alignment layers 15, 17 (column 3, lines 58-60)).

Regarding claim 6, Boie et al. teach the sensor is on an inner surface of any one of the first and second substrates (the capacitive touch sensor is in the inner surface, see Figure 3A).

Regarding claim 13, Boie et al. teach an LCD device including a touch panel (A unitary display and sensing device integrates liquid crystal display module elements of a liquid crystal display module for detecting input on a flat panel display screen with the capability for digitizing the detected inputs (abstract)) comprising:

an LCD panel (liquid crystal module) having first (color filter plate Fig.2 (10)) and second substrates (active matrix plate Fig.2 (25)) facing each other, and a liquid crystal layer (liquid crystal Fig.2 (16) between the first and second substrates;

a first polarizing plate on an outer surface of the first substrate; a second polarizing plate on an outer surface of the second substrate (The display components of the typical display panel shown in FIG. 1A, comprise a light reflecting and/or emitting back surface and two polarizers, between which is located a liquid crystal display module (column 1, lines 39-42)), where the two polarizers are the first and second polarizing plates;

a sensor (capacitive touch sensor Fig.3B (30)) having first and second coil arrays formed of a transparent electrode (The current attributable to area K 310 on sensing electrode L 311 will flow to node O 312 and the current attributable to area M 313 on sensing electrode N 314 will flow to node P 315. Area K 310 is much larger than area M 313, so the current flowing to node O 312 will be larger than the current flowing to node P 315, which is determinative of the location of the object relative to the center of the array of sensing electrodes (column 5, line 63 to column 6, line 3) where K and M represent the first and second coil arrays, the sensor (capacitive touch sensor Fig.3B (30)) integrated with any one of the first and second substrates in the LCD panel (LCD module Fig.2); and

a backlight (backlight, Fig.1A) unit below the LCD panel (LCD module, Fig.1A). accordingly, the prior art teaches all the claimed limitations with the exception of providing an EM sensor.

However, Yoshioka teaches a magnetic field sensor Fig.1 (7).

Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize the magnetic field as taught by Yoshioka in the

integrated liquid crystal display disclosed by Boie because this would provide a display device with a coordinate input function even in case of a liquid crystal display panel having a display screen divided into two, upper and lower parts to be driven separately, by ensuring the coordinate input detection signal current flowing, in a two-layer type liquid crystal display panel (column 2, lines 41-47).

Regarding claim 14, Boie et al. teach a controller for controlling the EM sensor below the backlight unit (Liquid crystal display panels are used in many electronic data handling devices, including lap-top computers, personal digital assistants, personal organizers, and point-of-sale terminals (column 1, lines 11-14), where the lap-top computers are including controller which can be above or below the backlight.

Regarding claim 15, Boie et al. teach the first coil array is perpendicular to the second coil array (K (310) and M (313) represent the first and second coil arrays where K and M are perpendicular to one another.

Regarding claim 16, Boie et al. teach film-type adhesive layers between inner surfaces of the first and second polarizing plates and outer surfaces of the first and second substrates (a perimeter adhesive seal 19 confines liquid crystal material 16 to the area remaining between transparent conductors 14, 18 and alignment layers 15, 17 (column 3, lines 58-60)).

Regarding claim 17, Boie et al. teach the sensor is on an outer surface of any one of the first and second polarizing plates (capacitive touch sensor Fig.3B (30) is located in the outer surface. (See figure 4B)..

Regarding claim 18, Boie et al. teach the sensor includes an adhesive layer on a

surface opposite to the first or second polarizing plate (a perimeter adhesive seal 19 confines liquid crystal material 16 to the area remaining between transparent conductors 14, 18 and alignment layers 15, 17 (column 3, lines 58-60)), (see figure 2).

Regarding claim 19, Boie et al. teach the sensor is between the LCD panel and the first or second polarizing plate (see Figure 2A).

Regarding claim 20, Boie et al. teach the sensor further includes an adhesive layer on a surface opposite to the LCD panel ((a perimeter adhesive seal 19 confines liquid crystal material 16 to the area remaining between transparent conductors 14, 18 and alignment layers 15, 17 (column 3, lines 58-60)), (see figure 2).

Regarding claim 28, Boie et al. teach an LCD device including a touch panel (A unitary display and sensing device integrates liquid crystal display module elements of a liquid crystal display module for detecting input on a flat panel display screen with the capability for digitizing the detected inputs (abstract)) comprising:

an LCD panel (liquid crystal module) having first (color filter plate Fig.2 (10)) and second substrates (active matrix plate Fig.2 (25)) facing each other, and a liquid crystal layer (liquid crystal Fig.2 (16) between the first and second substrates;

a thin film transistor array on the first substrate (liquid crystal material and an active matrix plate upon which an array of thin film transistors and picture elements (pixels) have been formed and which functions to cause the liquid crystal material to display shapes of variable opacity in response to an electric field created between two transparent conductors (column 1, lines 56-61));

a plurality of pixel electrodes electrically connected to respective thin film transistors of the thin film transistor array (liquid crystal display module 1, is a patterned material which is employed to prevent light from impinging on the thin film transistors used to switch the pixels on the active matrix plate 25. In addition, black matrix material 11 is also used to cover the edges of the pixel electrodes where distortions in the electric field applied across a liquid crystal display (column 1, lines 30-36));

a sensor (capacitive touch sensor Fig.3B (30)) having first and second coil arrays formed of a transparent electrode (The current attributable to area K 310 on sensing electrode L 311 will flow to node O 312 and the current attributable to area M 313 on sensing electrode N 314 will flow to node P 315. Area K 310 is much larger than area M 313, so the current flowing to node O 312 will be larger than the current flowing to node P 315, which is determinative of the location of the object relative to the center of the array of sensing electrodes (column 5, line 63 to column 6, line 3) where K and M represent the first and second coil arrays, the sensor (capacitive touch sensor Fig.3B (30)) integrated with any one of the first and second substrates in the LCD panel (LCD module Fig.2);

a color filter layer on the EM sensor corresponding to the pixel electrodes (color filter array Fig.2 (102));

an overcoat layer on the color filter layer (modified liquid crystal display module elements may include but are not limited to the light shielding layer for the color filters, the common voltage element and the color filter plate (column 2, lines 38-41));

a common electrode on the overcoat layer (modified liquid crystal display module elements may include but are not limited to the light shielding layer for the color filters, the common voltage element and the color filter plate (column 2, lines 38-41));

a liquid crystal layer between the first and second substrates (generating a displacement current in response to an object touching a portion of a display screen of the liquid crystal display wherein the black matrix layer and a transparent conductive layer of the liquid crystal display sense the location of the object touching the display screen based upon the relative size of the displacement current generated at the point of contact between the object and the display screen (column 10, lines 40-47)); and

a backlight (backlight, Fig.1A) unit below the LCD panel (LCD module, Fig.1A). accordingly, the prior art teaches all the claimed limitations with the exception of providing an EM sensor.

However, Yoshioka teaches a magnetic field sensor Fig.1 (7).

Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize the magnetic field as taught by Yoshioka in the integrated liquid crystal display disclosed by Boie because this would provide a display device with a coordinate input function even in case of a liquid crystal display panel having a display screen divided into two, upper and lower parts to be driven separately, by ensuring the coordinate input detection signal current flowing, in a two-layer type liquid crystal display panel (column 2, lines 41-47).

Regarding claim 29, Boie et al. teach a light-shielding layer between the EM sensor and the color filter layer (modified liquid crystal display module elements may

include but are not limited to the light shielding layer for the color filters, the common voltage element and the color filter plate (column 2, lines 38-41)) and a controller below the backlight unit for controlling the sensor (Liquid crystal display panels are used in many electronic data handling devices, including lap-top computers, personal digital assistants, personal organizers, and point-of-sale terminals (column 1, lines 11-14), where the lap-top computers are including controller which can be above or below the backlight.

Claims 37, 49, and 59 are rejected under 35 USC 103 (a) as being unpatentable over US Patent # 5,847,690 ("Boie et al") in view of US Patent # 5,162,782 ("Yoshioka") and in further view of US Patent # 6,473,235 ("Toyoshima et al").

Regarding claim 37, the combination of Boie et al. and Yoshioka fails to teach the transparent electrode includes any one of oxide indium, oxide tin, oxide zinc, indium-tin-oxide, tin-antimony-oxide and indium-zinc-oxide.

However, Toyoshima et al. teach the amount of current flowing through the panel in its ON state can be reduced and, upon pressing for establishing an ON state, an electrical contact can be obtained without fail, by regulating the transparent electrode 2 so as to have a three-component composition consisting of zinc oxide, indium oxide, and tin oxide and to have a sheet resistance of from 500 to 5,000.OMEGA (column 5, lines 41-47).

Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize the oxide indium as taught by Toyoshima in the combination's system of Boie and Yoshioka because this would provide a transparent

conductive film having a high transmittance and capable of being easily processed in electrode formation therefrom.

Claims 38 and 52 are rejected under 35 USC 103 (a) as being unpatentable over US Patent # 5,847,690 ("Boie et al") in view of US Patent # 5,162,782 ("Yoshioka") and in further view of US Patent # 6,630, 274 ("Kiguchi et al").

Regarding claim 38, the combination of Boie et al. and Yoshioka fails to teach the overcoat layer is formed of an organic layer.

However, Kiguchi et al. teach the composition of the protective layer the same as the composition of the organic thin film, thus making it possible to prevent crawling or unevenness in the protective film formed on the banks, whereupon color filters for liquid crystal display elements can be provided which exhibit outstanding contrast (column 4, lines 19-24).

Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize the protective layer as taught by Kiguchi et al. in the combination' system disclosed by Boie and Yoshioka because this would provide color filters and liquid crystal elements comprising banks that are ideal for methods of manufacturing color filters by filling banks with ink by the ink jet method (column 2, lines 29-32).

Claims 39 and 53 are rejected under 35 USC 103 (a) as being unpatentable over US Patent # 5,847,690 ("Boie et al") in view of US Patent # 5,162,782 ("Yoshioka") and in further view of US Patent # 6,284,436 ("Ahn et al").

Regarding claim 39, the combination of Boie et al. and Yoshioka fails to teach the organic layer includes any one of PhotoAcryl, BenzoCycloButen BCB and Polyamide.

However, Ahn et al. teach spin-coating a second polyamide solution of different chemical composition from said first polyamide acid solution on said first organic layer to form a second organic film (column 13, lines 47-50).

Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize first polyamide acid solution on said first organic layer to form a second organic film a taught by Ahn et al. in the combination's system disclosed by boie and Yoshiokia because this would provide an improved micro-injecting device.

Regarding claim 40, Boie et al. teach an LCD device including a touch panel (A unitary display and sensing device integrates liquid crystal display module elements of a liquid crystal display module for detecting input on a flat panel display screen with the capability for digitizing the detected inputs (abstract)) comprising:

an LCD panel (liquid crystal module) having first (color filter plate Fig.2 (10)) and second substrates (active matrix plate Fig.2 (25)) facing each other, and a liquid crystal layer (liquid crystal Fig.2 (16) between the first and second substrates;

a thin film transistor array on the first substrate (liquid crystal material and an active matrix plate upon which an array of thin film transistors and picture elements (pixels) have been formed and which functions to cause the liquid crystal material to

display shapes of variable opacity in response to an electric field created between two transparent conductors (column 1, lines 56-61));

a plurality of pixel electrodes electrically connected to respective thin film transistors of the thin film transistor array (liquid crystal display module 1, is a patterned material which is employed to prevent light from impinging on the thin film transistors used to switch the pixels on the active matrix plate 25. In addition, black matrix material 11 is also used to cover the edges of the pixel electrodes where distortions in the electric field applied across a liquid crystal display (column 1, lines 30-36));

a sensor (capacitive touch sensor Fig.3B (30)) having first and second coil arrays formed of a transparent electrode (The current attributable to area K 310 on sensing electrode L 311 will flow to node O 312 and the current attributable to area M 313 on sensing electrode N 314 will flow to node P 315. Area K 310 is much larger than area M 313, so the current flowing to node O 312 will be larger than the current flowing to node P 315, which is determinative of the location of the object relative to the center of the array of sensing electrodes (column 5, line 63 to column 6, line 3) where K and M represent the first and second coil arrays, the sensor (capacitive touch sensor Fig.3B (30)) integrated with any one of the first and second substrates in the LCD panel (LCD module Fig.2);

a color filter layer on the EM sensor corresponding to the pixel electrodes (color filter array Fig.2 (102));

an overcoat layer on the color filter layer (modified liquid crystal display module elements may include but are not limited to the light shielding layer for the color filters, the common voltage element and the color filter plate (column 2, lines 38-41));

a common electrode on the overcoat layer (modified liquid crystal display module elements may include but are not limited to the light shielding layer for the color filters, the common voltage element and the color filter plate (column 2, lines 38-41));

a liquid crystal layer between the first and second substrates (generating a displacement current in response to an object touching a portion of a display screen of the liquid crystal display wherein the black matrix layer and a transparent conductive layer of the liquid crystal display sense the location of the object touching the display screen based upon the relative size of the displacement current generated at the point of contact between the object and the display screen (column 10, lines 40-47)); and

a backlight (backlight, Fig.1A) unit below the LCD panel (LCD module, Fig.1A). Accordingly, the prior art teaches all the claimed limitations with the exception of providing an EM sensor.

However, Yoshioka teaches a magnetic field sensor Fig.1 (7).

Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize the magnetic field as taught by Yoshioka in the integrated liquid crystal display disclosed by Boie because this would provide a display device with a coordinate input function even in case of a liquid crystal display panel having a display screen divided into two, upper and lower parts to be driven separately,

by ensuring the coordinate input detection signal current flowing, in a two-layer type liquid crystal display panel (column 2, lines 41-47).

Regarding claim 41, Boie et al. teach a light-shielding layer between the EM sensor and the color filter layer (modified liquid crystal display module elements may include but are not limited to the light shielding layer for the color filters, the common voltage element and the color filter plate (column 2, lines 38-41)) and a controller below the backlight unit for controlling the sensor (Liquid crystal display panels are used in many electronic data handling devices, including lap-top computers, personal digital assistants, personal organizers, and point-of-sale terminals (column 1, lines 11-14), where the lap-top computers are including controller which can be above or below the backlight.

Regarding claim 49, the combination of Boie et al. and Yoshioka fails to teach the transparent electrode includes any one of oxide indium, oxide tin, oxide zinc, indium-tin-oxide, tin-antimony-oxide and indium-zinc-oxide.

However, Toyoshima et al. teach the amount of current flowing through the panel in its ON state can be reduced and, upon pressing for establishing an ON state, an electrical contact can be obtained without fail, by regulating the transparent electrode 2 so as to have a three-component composition consisting of zinc oxide, indium oxide, and tin oxide and to have a sheet resistance of from 500 to 5,000.OMEGA (column 5, lines 41-47).

Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize the oxide indium as taught by Toyoshima in the

combination's system of Boie and Yoshioka because this would provide a transparent conductive film having a high transmittance and capable of being easily processed in electrode formation therefrom.

Regarding claim 50, Boie et al. teach an LCD device including a touch panel (A unitary display and sensing device integrates liquid crystal display module elements of a liquid crystal display module for detecting input on a flat panel display screen with the capability for digitizing the detected inputs (abstract)) comprising:

an LCD panel (liquid crystal module) having first (color filter plate Fig.2 (10)) and second substrates (active matrix plate Fig.2 (25)) facing each other, and a liquid crystal layer (liquid crystal Fig.2 (16) between the first and second substrates;

a thin film transistor array on the first substrate (liquid crystal material and an active matrix plate upon which an array of thin film transistors and picture elements (pixels) have been formed and which functions to cause the liquid crystal material to display shapes of variable opacity in response to an electric field created between two transparent conductors (column 1, lines 56-61));

a plurality of pixel electrodes electrically connected to respective thin film transistors of the thin film transistor array (liquid crystal display module 1, is a patterned material which is employed to prevent light from impinging on the thin film transistors used to switch the pixels on the active matrix plate 25. In addition, black matrix material 11 is also used to cover the edges of the pixel electrodes where distortions in the electric field applied across a liquid crystal display (column 1, lines 30-36));

a sensor (capacitive touch sensor Fig.3B (30)) having first and second coil arrays formed of a transparent electrode (The current attributable to area K 310 on sensing electrode L 311 will flow to node O 312 and the current attributable to area M 313 on sensing electrode N 314 will flow to node P 315. Area K 310 is much larger than area M 313, so the current flowing to node O 312 will be larger than the current flowing to node P 315, which is determinative of the location of the object relative to the center of the array of sensing electrodes (column 5, line 63 to column 6, line 3) where K and M represent the first and second coil arrays, the sensor (capacitive touch sensor Fig.3B (30)) integrated with any one of the first and second substrates in the LCD panel (LCD module Fig.2);

a color filter layer on the EM sensor corresponding to the pixel electrodes (color filter array Fig.2 (102));

an overcoat layer on the color filter layer (modified liquid crystal display module elements may include but are not limited to the light shielding layer for the color filters, the common voltage element and the color filter plate (column 2, lines 38-41));

a common electrode on the overcoat layer (modified liquid crystal display module elements may include but are not limited to the light shielding layer for the color filters, the common voltage element and the color filter plate (column 2, lines 38-41));

a liquid crystal layer between the first and second substrates (generating a displacement current in response to an object touching a portion of a display screen of the liquid crystal display wherein the black matrix layer and a transparent conductive layer of the liquid crystal display sense the location of the object touching the display

screen based upon the relative size of the displacement current generated at the point of contact between the object and the display screen (column 10, lines 40-47)); and

a backlight (backlight, Fig.1A) unit below the LCD panel (LCD module, Fig.1A). accordingly, the prior art teaches all the claimed limitations with the exception of providing an EM sensor.

However, Yoshioka teaches a magnetic field sensor Fig.1 (7).

Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize the magnetic field as taught by Yoshioka in the integrated liquid crystal display disclosed by Boie because this would provide a display device with a coordinate input function even in case of a liquid crystal display panel having a display screen divided into two, upper and lower parts to be driven separately, by ensuring the coordinate input detection signal current flowing, in a two-layer type liquid crystal display panel (column 2, lines 41-47).

Regarding claim 51, Boie et al. a common electrode on any one of the first and second substrates and a controller for controlling the sensor below the backlight unit (modified liquid crystal display module elements may include but are not limited to the light shielding layer for the color filters, the common voltage element and the color filter plate (column 2, lines 38-41)) and a controller below the backlight unit for controlling the sensor (Liquid crystal display panels are used in many electronic data handling devices, including lap-top computers, personal digital assistants, personal organizers, and point-of-sale terminals (column 1, lines 11-14), where the lap-top computers are including controller which can be above or below the backlight.

Regarding claim 52, the combination of Boie et al. and Yoshioka fails to teach the insulating layer is formed of an organic layer.

However, Kiguchi et al. teach the composition of the protective layer the same as the composition of the organic thin film, thus making it possible to prevent crawling or unevenness in the protective film formed on the banks, whereupon color filters for liquid crystal display elements can be provided which exhibit outstanding contrast (column 4, lines 19-24).

Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize the protective layer as taught by Kiguchi et al. in the combination' system disclosed by Boie and Yoshioka because this would provide color filters and liquid crystal elements comprising banks that are ideal for methods of manufacturing color filters by filling banks with ink by the ink jet method (column 2, lines 29-32).

Regarding claim 53, the combination of Boie et al. and Yoshioka fails to teach the organic layer includes any one of PhotoAcryl, BenzoCycloButen BCB and Polyamide.

However, Ahn et al. teach spin-coating a second polyamide solution of different chemical composition from said first polyamide acid solution on said first organic layer to form a second organic film (column 13, lines 47-50).

Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize first polyamide acid solution on said first organic layer to form a second organic film a taught by Ahn et al. in the combination's system

disclosed by boie and Yoshiokia because this would provide an improved micro-injecting device.

Regarding claim 59, the combination of Boie et al. and Yoshioka fails to teach the transparent electrode includes any one of oxide indium, oxide tin, oxide zinc, indium-tin-oxide, tin-antimony-oxide and indium-zinc-oxide.

However, Toyoshima et al. teach the amount of current flowing through the panel in its ON state can be reduced and, upon pressing for establishing an ON state, an electrical contact can be obtained without fail, by regulating the transparent electrode 2 so as to have a three-component composition consisting of zinc oxide, indium oxide, and tin oxide and to have a sheet resistance of from 500 to 5,000.OMEGA (column 5, lines 41-47).

Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize the oxide indium as taught by Toyoshima in the combination's system of Boie and Yoshioka because this would provide a transparent conductive film having a high transmittance and capable of being easily processed in electrode formation therefrom.

Allowable Subject Matter

7. Claims 8-11, 22-25, 33-36, 45-48, and 55-58 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean Lesperance whose telephone number is (571) 272-7692. The examiner can normally be reached on from Monday to Friday between 10:OOAM and 6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Hjerpe, can be reached on (571) 272-7691.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Jean Lesperance

Division 2629

Date 3/9/2007

RICHARD HJERPE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600